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ABSTRACT

This report, which was written during a project to develop a better understanding of which occupations may relate to agribusiness and to identify employment opportunities in agribusiness, is designed to assist state occupational information coordinating committees and state employment security agencies in developing special reports/lists of agribusiness occupations for use by agricultural education programs. Section 1 is an introduction that provides a brief historical overview of efforts to develop agribusiness-related employment estimates. It includes a review of selected government efforts related to identifying agribusiness-related employment opportunities. Included in the profile of each of the nine agencies reviewed are some or all of the following: description of the agency's activities, its current status, its relationship to agribusiness, and its pertinent publications. Section 2 presents two lists of occupations related to agribusiness competencies and a description of the procedure used to develop them. Included in section 3 are the following support and background materials: list of agribusiness occupational workshop participants, 13-item resource materials list, decision process matrix, summary reports of 12-state agribusiness occupational review and state review meetings, list of meeting participants, and comments/recommendations from the state review meetings. (MN)

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ED 374 318

EMPLOYMENT OPPORTUNITIES IN AGRIBUSINESS

A Report

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NATIONAL VOCATIONAL AGRICULTURAL TEACHERS ASSOCIATION, INC.

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TABLE OF CONTENTS

PREFACE 1

SECTION I - AN INFORMATION AND DATA BASE UPDATE I-1

INTRODUCTION I-1
Project Description I-1
Background I-1

A REVIEW OF RECENT GOVERNMENT AGRIBUSINESS EMPLOYMENT RELATED PROGRAMS AND ACTIVITIES I-8

SECTION II - THE PROCESS II-1
Introduction II-1
Step I. Develop a preliminary list of occupations. II-2
Step II. Review and Validation by the National Agribusiness Work Group. II-2
Step III. Review and Comment by Selected State Agencies. II-3
Final List of Occupations Requiring Agribusiness Competencies. II-3
Future Implementation and Data Base Issues. II-10
Short-Term Information Development and Implementation Issues. II-10
Long-term Information Development and Use Issues II-11

SECTION III - SUPPORT MATERIALS III-1
AGRIBUSINESS, OCCUPATIONAL WORKSHOP PARTICIPANTS III-1
AGRICULTURAL OCCUPATIONAL WORK GROUP AGENDA III-2
LIST OF RESOURCE MATERIALS III-3
REVIEW PROCESS FOR LISTS 1, 2 AND 3 . . . . . III-4
A SUMMARY REPORT ON THE 12 STATE REVIEW III-6
A SUMMARY REPORT ON THE STATE REVIEW MEETINGS ON THE AGRIBUSINESS PROJECT. III-10
OCCUPATIONS REQUIRING COMPETENCIES IN AGRICULTURE EDUCATION, EMPLOYMENT 1990 AND PROJECTED 2005, TOTAL UNITED STATES III-17

PREFACE

This study was conducted under a grant from the National Occupational Information Coordinating Committee to the Alumni Association of the Future Farmers of America and the National Vocational Agriculture Teachers Association.

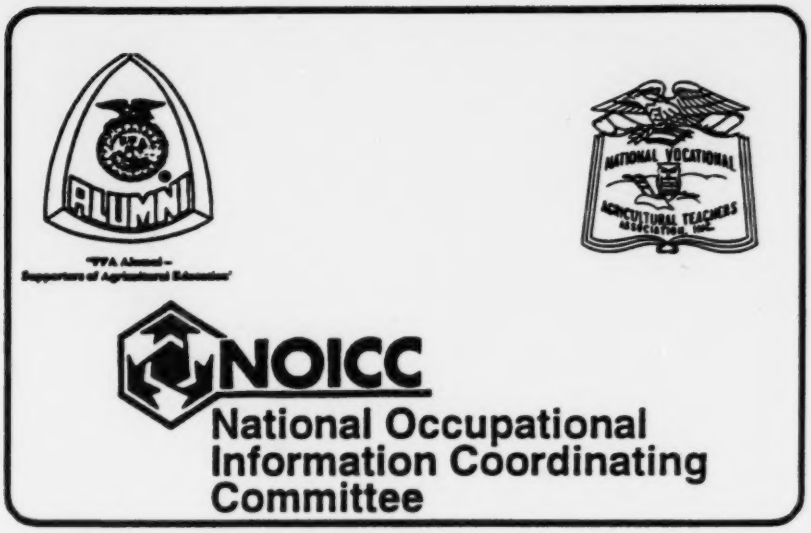
The research and the preparation of this report was the responsibility of Richard E. Dempsey, Occupational Information Specialist. Mr. Rod Slack of The NOICC was the project officer providing overall project direction with support from Jim Woods, NOICC Coordinator for Occupational Information Systems Development.

Many individuals , both in and outside the federal government were of great assistance in completing this project. The author would like to express a special thanks to Robert W. Cox, Executive Director, National FFA Alumni Association, Robert Graham, Director of the National Vocational Teachers Association, and Dr. Larry Case, U.S. Department of Education for their continuous assistance and support through-out the project.

We would also like to thank the many people who have participated as reviewers or as members of a workgroup.

A brief description of this report follows, to assist in the reading and use of the report. Section I, Introduction, of this report provides a brief historical overview of efforts to develop agribusiness related employment estimates and provides a review of selected government efforts related to this area. Section II is the heart of the report and presents two lists of occupations related to agribusiness competencies. The reader may be tempted to begin with Section II; however, we encourage you to read pages I-1 through I-7 of Section I first, since it includes discussion of issues, definitions, and prior studies that are referenced in Section II, and sets a context for Section II. The reader may wish to read the review of selected government efforts from page I-8 through the end of Section I after reading Section II. Section III provides support and background materials for the project and this report.

We hope this report proves useful in assisting State and local personnel in better understanding the relationships of agribusiness education and occupations that require skills related to agribusiness education. This report serves as a preliminary step in improving information on agribusiness related employment estimates, an area that we believe requires significantly more attention in the future.



SECTION I

BACKGROUND

SECTION I
EMPLOYMENT OPPORTUNITIES IN AGRIBUSINESS; AN INFORMATION AND DATA BASE UPDATE, 1994

INTRODUCTION

Project Description

This project was conducted through a grant from the National Occupational Information Coordinating Committee (NOICC) to the FFA Alumni Association and the National Vocational Agricultural Teachers Association. This report was prepared by Richard E. Dempsey, under the direction of Rod Slack, the NOICC project officer for this effort. The primary goal of this project was to develop a better understanding of what occupations may relate to agribusiness, and to identify employment opportunities in agribusiness. Specific objectives of the project included:

(a) Provide a historical background, including a review of the literature and a data review that can be used in any future efforts to improve agribusiness data;

(b) Develop a list, as appropriate, of current occupations covered by the Bureau of Labor Statistics Occupational Employment Statistics program that relate to agribusiness;

(c) Develop guidelines for use by State Occupational Information Coordinating Committees (SOICC) and State Employment Security Agencies (SESA) to develop special reports or lists of agribusiness occupations; and

(d) Encourage all States to develop the reports using the procedures developed in (b), and to provide them for use by agricultural education programs.

The project was carried out in three steps. During Step I the project team developed a background paper and provided a review of recent federal government activities in developing employment estimates for the agricultural industry and agriculture related occupations. (Section I of this Report). During Step II, lists of agribusiness related occupations and industries were developed and the reports and lists were validated. (Section II of this Report). Step III included the development of software and methods that can be used by a State in the development of special agribusiness occupational lists.

Background

In a growing and changing economy, information on the occupational composition of the current and future work force is essential. Such information is of great importance to educational planners, administrators and other public officials responsible for developing and implementing education and job training programs. Information on future job openings is also of great value to young people who are in the process of making long term career choices.

Much of the education and job training legislation of the past three decades has emphasized the importance of demonstrating a labor market need for the occupation when implementing new or expanding existing vocational technical education or job training programs. Often the data needed are for information on the employment demand for workers in specific occupations at the State and/or local labor market level. It is at the local level that most education and job training planning decisions are made and that most students seek and accept their first employment after completing their education.

Major new information efforts in the development and use of occupational employment demand and supply information have been implemented during the past two decades. As a result of these efforts, the quantity and quality of data at the State and local level have expanded greatly. Two program initiatives have been primarily responsible for these data and these data improvements in the increasing use of occupational information in the vocational technical education and job training planning process. These two systems are the Occupational Employment Statistics (OES) Program conducted by the Bureau of Labor Statistics (BLS) and cooperating State Employment Security Agencies (SESA) and the Occupational Information System (OIS) implemented and supported by the NOICC/SOICC network.

This project is part of continuing series of efforts that have been undertaken over the past two decades to introduce new reliable methods to adequately measure the employment opportunities available in the area of agribusiness. Historically, the agricultural education community has long recognized the need to develop information on the broad range of job opportunities that were available to students completing studies in Agriculture related educational programs, both in secondary vocational program areas as well as those at various levels of postsecondary education.

However, an appropriate data base designed for the specific use of supporting and planning agricultural education was not available. The development of information for the "agribusiness" concept did not fit easily into the generally accepted classification systems or to the standard procedures that were being used to prepare and present occupational employment demand and supply information for other program areas in vocational education.

Measuring job opportunities in "agribusiness" posed unique problems. First, as stated above, the basic concept of "agribusiness" did not fit the existing industry or occupation classification systems used through-out government to collect and publish employment data. The classification systems in use have evolved over the years and are widely accepted as standards by the statistical community. They were developed under the leadership of the Office of Management and Budget (OMB) and are mandated by that agency for use in all federal government statistical programs. These systems are the Standard Industrial Classification System (SIC) and the Standard Occupational Classification System (SOC).

The SIC and the SOC classification systems cover all industry and occupational fields including agriculture. However, data classified by these systems is usually presented in a manner that focuses (or limits) attention to the production agriculture industry sectors and "on the farm" occupations; both areas are where, historically, employment growth has been very limited.

Administrators, teachers, and others involved in agricultural education feel that information on production agriculture does not adequately represent the true picture of the employment opportunities available to students completing studies in agriculture. They believe that this is a much narrower employment data base than would result if the broader definition of "agribusiness" were followed in the development of information on agricultural education related job opportunities. The principal purpose of this study is to update past efforts in defining the agribusiness data base.

Employment in Agricultural sector of the economy has been declining for several generations. The Agricultural Production sector (SIC's 01 & 02) suffered the greatest loss in employment and is continuing to decline today. Part of this decline has been off-set by the rapid growth experienced in the Agricultural Service sector (SIC 07). The employment levels in "on the farm" occupations are also projected to decline (see Table 1). While Agricultural education supporters argued that these data did not adequately represent the true job market for completers of their programs, these data are often used by those outside their communities to raise questions concerning the appropriateness of continuing secondary and postsecondary agricultural programs at their current levels. Often these limited data were presented to defend proposed funding cuts in agricultural education.

TABLE 1
EMPLOYMENT IN THE AGRICULTURAL PRODUCTION AND SELECTED FARMING OCCUPATIONS

1990 AND PROJECTED 2005
(in thousands)

INDUSTRY/OCCUPATION	EMPLOYMENT		EMPLOYMENT CHANGE 1990 - 2005	
	1990	2005	NUMBER	PERCENT
Industry				
Agriculture	2193	1645	-548	-25%
Livestock	1096	864	-232	-20%
Other Agricultural Products	1097	781	-316	-28%
Occupations				
Farm Operators & Managers	1223	1023	-200	-16%
Farm Workers	837	745	-92	-11%

Source: Bureau of Labor Statistics

Supporters of agricultural education respond that employment in the "agricultural production" sector of the economy and/or in "farming occupations" covered only a small share of the employment opportunities available to students completing their education programs. This community expressed their concerns regarding the short-comings of the occupational employment data base and made initial attempts to rectify the situation with the creation of a federal government "Interagency Committee on Employment Opportunities In Agribusiness". This Committee, formed in 1968, consisted of members from several federal agencies that produce and use information on employment in agriculture. Committee members represented interested federal agencies such as the then Office of Education, the Bureau of the Census, the Bureau of Labor Statistics, the Department of Agriculture, and others.

The Agribusiness Committee initiated efforts in the early 1970's to define the universe of "agribusiness," i.e., they began to identify the employment data base that represented the employment outcomes of agricultural education. The Committee concluded that employment opportunities in occupations requiring competencies in agricultural education offered the best measure of that universe. Initially, some committee members sought to simply revise the existing occupation and industry classification systems to more adequately represent the concept of "agribusiness." While this appeared inviting, this course of action was quickly dismissed once the realities of attempting such major changes were recognized. As indicated above, the existing classification systems had developed over many decades and were universally accepted by federal statistical organizations. Serious consideration was also given by the Committee to implementing a special employment data collection effort. This avenue of action was also dismissed as inappropriate given the costs involved and, most importantly, the availability of existing data. The Agribusiness Committee concluded that the proper course of action was to explore the potential of existing data systems. Such data programs offered the advantage of already being established, agency supported and available on a re-occurring basis. Most importantly the existing programs such as the Decennial Census or the then (1972) experimental OES survey program and the National/State industry-occupational employment matrix system offered a readily available source of current and projected employment estimates for a broad range of occupations, including those requiring competencies in agricultural education.

Thus, the initial effort to define "agribusiness" and measure job opportunities accepted the existing industry (SIC) and occupational classification systems (Census/BLS/SOC). The data base selected for use in this pioneering effort was the 1970 decennial census. At that time (1971), the decennial census was the only comprehensive source of occupational employment data by State. For the nation as a whole, data were also available from the Current Population Survey (CPS) and, for selected occupations, from the Scientific and Technical Personnel Survey (STP) conducted by the BLS with the support of the National Science Foundation. (The STP survey was the forerunner to the OES.) Fortunately for the Agribusiness Committee, the Employment and Training Administration, working jointly with the Bureau of Labor Statistics, had already contracted with the Bureau of the Census to purchase special tabulations of the 1970 census of population. This special request covered a number of important items and one tabulation was of special interest to the Agribusiness Committee. This tabulation presented occupational employment classified by industry and by class of worker. (Also included in this special request was occupational employment by age and sex

by State. These data were later used to develop the first set of State specific occupational separation rates.) The special tabulations covered all occupation and industry categories and included separate tabulations for the Nation, each State and for each metropolitan area with a 1970 population of over 250,000. This special tabulation was selected by the Interagency Committee as the data base for the first attempt to define and measure fully the employment of occupations requiring competencies in agricultural education, i.e., agribusiness employment.

The first task of this project was to identify which specific occupations in which industry sectors to include as part of the universe of agribusiness employment. Simply put, which occupations in which industries require competencies in agriculture for workers to effectively carry out their jobs. To accomplish this identification, it was necessary to draw upon the expert knowledge of the agricultural education community with technical support provided by occupational information specialists. As noted above, the 1970 census occupational employment data cross-classified by industry provided the universe for defining the agribusiness data base.

To assist in this task, the Interagency Committee established certain guidelines. It was accepted that agribusiness employment would be defined as those workers who were employed in occupations (in the census data base) that met one of the following three categories.

The categories were:

(1) Occupations for which workers in <u>all</u> industries require or use agricultural competencies; (examples would be "animal care-takers" or "veterinarian");

(2) Occupations for which <u>all</u> workers in <u>some</u> industries require or use agricultural competencies; (an example might be "small engine repairer" in the Agricultural Service industry); and

(3) Occupations for which <u>some</u> workers in <u>some</u> industries require or use agricultural competencies; (examples may be "inspectors" and "compliance officers", except construction in the Federal government where the worker has to work primarily in the agricultural sector or "financial officers" in the Banking industry where the bank deals heavily with agricultural loans).

As noted above, a work group of experts representing agricultural education and the occupational information communities were brought together to complete the first stage of the definition process. Once their initial decisions were made, the draft definitions were circulated for a broader review to federal and State agencies and other interested parties. Upon the completion of this review and resulting revisions, the definition of agribusiness was completed and final approval and dissemination provided by the Interagency Committee on Agribusiness. The Department of Agriculture then provided computer processing services and, using the 1970 Census data tapes, tabulated the first set of employment estimates (1970) for

agribusiness. These data were published in a set of regional reports and distributed by the Department of Agriculture in 1974.

At the same time that the initial Agribusiness project was being carried out, the Bureau of Labor Statistics (with funding from the Employment and Training Administration of the Department of Labor) was constructing the National-State Industry/Occupation Employment Matrix System. This special project also used the 1970 census cross classified tabulations as one of the primary data sources. However, special adjustments were introduced during the construction of matrices that greatly improved the census data base. For example, at the National level occupational employment estimates from the CPS or other data sources, such as the Scientific and Technical Personnel Survey, were substituted for census data. Similarly, data from the Bureau's Current Employment Statistics (CES) series was used to establish industry employment totals. In the process of constructing the State matrices, each State submitted industry employment estimates that were used in the construction of their matrix.

Another important aspect of this project was the development of a carefully documented computer software system that was made available to States for their use in updating and projecting the State matrix. Once completed, this project resulted in a comprehensive National/State system, and each State was provided with its specific State matrix. Each State matrix was identical to the National in concept, structure and content, and the combination of the 50 State Matrices were additive to the National Matrix. Furthermore, once the National matrix was projected (to 1985), it was possible to project a State matrix (using "Method B" from the publication "Tomorrow's Manpower Needs", BLS bulletin 1606). Then, using industry employment estimates prepared by the State Employment Security Agency and the matrix system, projections of occupational employment for the State could be computed. This new project was of great interest to the Agribusiness Committee since the availability of the updated (1976) and projected (1985) State matrix system would make it possible to tabulate projections of future job opportunities in agribusiness. This could be accomplished by simply using the agribusiness definitions developed by the Agribusinesses Committee and a simple set of computational instructions issued by BLS (see NOICC Administrative Memorandum 81-6). In many States, these procedures were followed and State projections of job opportunities in agribusiness prepared and provided to the State agricultural education community.

By the 1980's, the BLS had developed the OES program. State coverage grew until all States were included in the program. With but a few exceptions (such as agricultural production), all industries were covered during the program's three-year survey cycle. As more and more States completed the three-year survey cycle and a full data base became established, they shifted their occupational employment projection program to the OES survey data base. At the national level, the BLS employment projection program was also shifting to the OES. (BLS continues to use the Current Population Survey of employment in the Agricultural Industry Sector and for employment of self employed workers. However, similar data was not available to the States since the small size of the CPS sample of households precludes the preparation of State employment estimates.)

The shift to the OES survey occupations also required major changes to the agribusiness definitions. This shift also drew attention to the lack of a reliable State employment data base

for the agricultural industry sectors (SIC's 01, 02 and 07). As described above, the initial effort in defining agribusiness occupations had been developed using the 1970 Census occupational classifications. As more and more States shifted to the OES survey data base, the agribusiness definition based on the Census became obsolete, creating a need to re-define agribusiness in terms of the OES.

In 1980, NOICC commissioned a study to review these issues and prepare recommendations to address the need for better information for agribusiness. The study was conducted by the Iowa SOICC and their report "*A Study Of The Issues Related To The Collection Of Occupational Employment Data In Agriculture*" was issued in December 1980. High among the study's recommendations were to:

(1) (re)define Agribusiness employment using the OES data base for the Nonagricultural sectors; and

(2) prepare a procedural manual that would assist States in conducting occupational surveys in the Agricultural industry sectors (SIC's 01, 02 and 07).

Responding to these recommendations, NOICC, again working with the IOWA SOICC, developed and issued the report a "Researchers's Guide for Collecting State Occupational Employment Data In Agriculture". This report suggested possible options that a State could follow for conducting a survey of the occupational employment in the agricultural sectors (01, 02 and 07). Equally important, the study presented a new refined definition of agribusiness occupations based on the OES survey occupations.

Many changes have occurred since the Iowa study was released. Occupations have been added and deleted from the OES survey. In addition, the survey has recently been expanded to include the agricultural service sector (SIC 07). The primary purpose of this project is to update these definitions to incorporate the changes and additions that have been introduced into the data base since the publication of the Iowa study.

A REVIEW OF RECENT GOVERNMENT AGRIBUSINESS EMPLOYMENT RELATED PROGRAMS AND ACTIVITIES

The purpose of this section of the report is to identify and briefly describe a number of recent government agricultural employment efforts or sources that may warrant special consideration to those interested in employment in the Agribusiness sector. The following review has been limited to the 1987-1992 period and has focused primarily on programs that address employment in the agricultural industry sectors (SIC 01, 02 and 07). A number of on-going statistical programs provide valuable information that may provide important inputs for use in developing information concerning employment in occupations related to agricultural education programs. In addition, a number of special studies and projects have been conducted during the past five years by a number of federal agencies. The efforts reviewed here are not exhaustive, but represent those that most directly relate to areas of employment and education in Agriculture.

During the review process, discussions were held with staff members in the Departments of Education, Labor, Agriculture, and Commerce. In addition, meetings were also held with the Interstate Conference of Employment Security Agencies (ICESA) and the National Council for Agricultural Education. A broad range of reports were also reviewed and those considered relevant are included in the following discussion.

For purpose of presentation, the results of this review are organized by federal government department and agency responsible for the program and/or the report being discussed.

Department: U.S. Department of Education
Agency: National Center for Education Statistics (NCES).
Program: The Classification of Instructional Programs (CIP)

Description

The Classification of Instructional Programs (CIP) was originally developed by NCES in 1980 and first revised in 1985 and most recently revised in 1990. This publication presents the second revision and covers programs at the secondary, postsecondary and adult education levels. The CIP is used as the basic classification for all NCES surveys and is the accepted government standard classification for all education information surveys. In addition, the CIP is used widely by other federal agencies such as the National Occupational Information Coordinating Committee, the Bureau of Labor Statistics, the Department of Commerce, the National Science Foundation and the National Academy of Science. It is also used by State agencies and national associations.

The CIP is a widely accepted document for classifying and organizing information on the number of students enrolled in and completing education programs. These data are of prime importance in estimating the current and future supply of workers for many professional and skilled occupations. The CIP system has been adopted by NOICC and is used to develop and organize "units of analysis" in the Occupational Information System (OIS). Much of the supply data presented in the OIS is classified by CIP.

Current Status

The CIP revision has been introduced by NCES into their data collection programs. State education agencies have shifted to the revised CIP system. NOICC and NCES recently completed a joint effort to crosswalk the CIP program categories to occupations. The crosswalk developed through this project will have a major impact on the data organization and presentation in the OIS. The results of this project are now available through the NOICC Crosswalk and Data Center.

Relationship to Agribusiness

The CIP covers all education programs, including those in agriculture. The CIP provided the information base used by this project to select the educational programs that provide students with the competencies required for employment in agribusiness occupations.

Publication

Classification of Instructional Programs, 1990 Edition

Department: U.S. Department of Labor
Agency: Bureau of Labor Statistics.
Program: Occupational Employment Statistic (OES) Survey

Description

The OES Survey is a Federal-State cooperative program designed to produce national, State and local area data on current occupational employment. The survey is conducted on a three-year cycle, with one-third of the industry sectors of the U.S. economy surveyed each year. Collection questionnaires are specially designed for each industry sector and data collected and tabulated for each three digit SIC industry.

As noted in the earlier discussion, historically the agricultural industry sectors (SIC 01,02 and 07) have not been covered by the OES survey. The survey draws its sample of establishments from the list of employers reporting employment and wage information to the unemployment insurance program. In most States, agricultural workers are not covered by unemployment insurance and therefore, a list of employers is not available for SIC's 01 and 02 for use as a base from which to draw a sample to survey agriculture. Agricultural Services (SIC 07) is included in covered employment and has recently been added to the regular occupational survey cycle and was surveyed for the first time in 1992.

The results of the OES survey provide the principle source of occupational employment used by the BLS and the States to prepare current and projected industry/occupation matrices data. The BLS provides leadership, technical support and funding for the collection aspects of this program. Projections of occupational employment using this data base are the sole responsibility of the State. No direct technical or resource support for preparing employment projections is provided by BLS or any other federal agency. NOICC has prepared technical support materials and, with the participation of BLS and the Interstate Conference of Employment Security Agencies (ICESA), bi-annually conducts a series of work-shops on projection methods. Presently all States are participants in the OES survey program.

Relationship to Agribusiness

The OES survey is the source of current occupation staffing patterns used to develop employment estimates for all occupations in the non-agricultural wage and salary sectors of the economy. The OES survey data, together with industry projections, is the principal source of data used to project employment by occupation. The current and projected matrix form the universe of information used to identify and tabulate employment for occupations requiring competencies in agriculture. The availability of State projections of employment by occupation and industry (including agriculture) are of vital importance in developing estimates of current and projected employment in agribusiness occupations. These occupations comprise a major component of agribusiness employment and are

essential to measuring "off the farm" employment that require competencies in agriculture.

A major step forward has recently been made, with the addition of the Agricultural Service sector (SIC 07) to the regular OES survey program. Over the past two decades, employment in the agricultural service sector has been among the rapidly growing in the economy. According to the Bureau of Labor Statistics, Agricultural Services grew from 428 thousand in 1975 to 975 thousand in 1990 (*Monthly Labor Review*, November, 1991). Continued employment growth is expected in the future. BLS projects a further increase to 1,245,000 by the year 2005.

Publications

BLS publishes complete results from each round of the survey. Similar data for States is available and published by each cooperating State agency.

Department: U.S. Department of Labor
Agency: Bureau of Labor Statistics
Program: Projections of National Job Openings by Occupation

Description

BLS has the basic federal government responsibility for developing projections of employment by industry and occupation. It has been carrying out this program for many years and continually revises and updates the projections on a two-year cycle. As part of the process of preparing these projections, the BLS constructs a current and projected industry/occupational employment matrix. This table presents occupational employment by industry and accounts for all workers employed by the economy. Over 500 occupations are included in the table and are cross classified by approximately 258 industries. The OES survey is used to prepare estimates of occupational wage and salary employment in non-agricultural sectors of the economy. Employment in "farm occupations" in the agricultural industry sectors and self employment estimates are based on annual average employment data from the CPS.

As indicated above, as part of their employment projection process, BLS projects the occupational staffing patterns of each industry. Projections of aggregate employment for each industry sector are prepared separately. Occupational projections are then prepared by applying each projected occupational staffing pattern to the corresponding industry employment projection. The resulting occupational projections in each industry are then summed across all industries to obtain overall employment projections for each occupation. This process results in a projected industry/occupation employment matrix that then can be used to estimate employment in agribusiness occupations. (The projected changes in the national staffing patterns, called change factors, may then be used to prepare corresponding State employment projections by occupation.)

Current Status

National projections are revised and updated on a two year cycle. The entire system is moved forward at five year intervals. The latest set of data , 1992 - 2005, were published in the November 1993 issue of the *Monthly Labor Review* and is reprinted in *The American Workforce: 1992-2005, BLS Bulletin 2452*. The Industry/Occupational Employment Matrix is sold by BLS on floppy disk. A matrix of change factors is also provided by BLS to cooperating States on request. The status of State projections vary from state to state.

Relationship to Agribusiness

The Industry/Occupational Employment Matrix provides the data base for the occupations and industries that fit a definition of agribusiness. At the national level, the BLS matrix provides current and projected employment to tabulate current and projected employment in agribusiness occupations. As indicated earlier, occupational employment for agriculture, (SIC's 01, 02, and 07) is established using annual average employment data from the CPS.

The CPS counts each worker once, in their primary job. The persons holding secondary jobs in Agriculture or in farm occupations are not included in the CPS counts. It should be noted that, in May 1989, supplementary questions were added to CPS to collect information on the number and characteristics of persons holding two or more jobs, i.e., multiple jobholders. The results of that survey (see *Multiple Jobholding Up Sharply in the 1980's, Monthly Labor Review, July 1990*) showed that approximately 200,000 workers held secondary jobs in the Agriculture, forestry and fishing sector.

Employment projections only identify part of the total number of future job openings. To compute the total future job openings it is necessary to include the openings that will result when workers leave the labor force for reasons such as retirement, disability and death. Recently, BLS has conducted extensive research designed to improve existing methods of estimating future occupational job openings from these sources. The results of these efforts were recently published in the BLS report "*Total and Net Occupational Separations: A Report on Recent Research*," August 1991. These rates have been updated twice since this report was prepared.

Publications

November, 1993 Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics.

Total and Net Occupational Separations: A Report on Recent Research, August, 1991

Occupational Projections and Training Data, 1994 Edition, BLS Bulletin 2451.

Department: U.S. Department of Labor
Agency: Office of the Assistant Secretary for Policy, Office of Program Economics
Program: Findings From the National Agricultural Workers Survey, (NAWS) 1990

Description

This survey was conducted by Acquire International, San Mateo, California under contract with the Office of Program Economics. The report provides information on the characteristics and work patterns of U.S. agricultural workers performing Seasonal Agricultural Services (SAS). The information was gathered by over 2000 personal interviews of SAS workers. The survey is conducted as part of DOL responsibilities to determine if there is a shortage of SAS workers under the Immigration Reform and Control Act. The survey primarily identifies the characteristics of the SAS workforce such as race, sex, age, education, and income. Patterns of employment such as migration patterns and work history are also presented. Data on the characteristics from the interviews are presented by geographic region.

Current Status

This appears to be a one time survey that was conducted in 1990 and published in July 1991.

Relationship to Agribusiness

There is little relationship between this information and the identification of employment opportunities in agribusiness. The information may be of some value in better defining the jobs targeted as potential outcomes of agricultural education. This study would seem to eliminate many SAS workers from that category.

Publication

Findings from the National Agricultural Survey, 1990, Office of Program Economics, Research Report #1, U.S. Department of Labor.

Department: U.S. Department of Agriculture
Agency: National Agriculture Statistics Service, Estimates Division.
Program: Farm Labor Survey

Description:

The Farm Labor Survey is conducted quarterly by the National Agricultural Statistical Service. The survey uses a sample of farm operators that is constructed from a variety of sources. In April 1992, the survey estimated that 2.87 million people were working on farms and ranches. Covered by the survey are the self-employed, hired workers, and unpaid workers. Also included are agricultural service workers who were employed on farms during the survey week. National data on employment and hourly wage rates are published. Estimates of the number of total farm workers, the self-employed, hired workers and unpaid are reported by 11 geographic regions and separately for 17 major farming States. Information on hours of work for each worker category are reported by geographic area. The wage rates of hired workers are reported by type of worker, i.e. field, livestock, field and livestock, supervisory and other. Unpublished counts of the numbers of hired workers by type of worker are also be available by State and region.

Historical data on these workers are published by DOA in the report *Farm Employment and Wage Rates, 1910-1990*. This publication combines selected farm labor estimates from 1910 through 1990 into a single reference document.

Relationship to Agribusiness

Paramount in estimating current agribusiness employment is the need to establish current employment in the agricultural sector and in farm occupations. Preparing such estimates at the State level has been and remains a major obstacle to measuring agribusiness employment. Nationally, the CPS provides a data base. However, the CPS sample is too small to directly provide State estimates. (CPS data are currently used in assisting in the preparation of total State labor force estimates.) The decennial Census provides these data but is only available once each ten years. Also, census estimates are for early spring (March/April) and may not reflect the annual average employment situation in many States. While largely unused in the past, data collected in the farm labor survey may provide a valuable source of data for estimating employment in the agricultural production sectors. This potential should be explored.

Publications

Farm Employment and Wage Rates, 1910-1990, U.S. Dept. of Agriculture, National Agricultural Statistical Service, Statistical Bulletin Number 822

Farm Labor, U.S. Dept. of Agriculture, National Agricultural Statistics Service, Agriculture Statistics Board. (Issued Quarterly)

Department: U.S. Department of Agriculture
Agency: Higher Education Programs, Cooperative State Research Services
Program: Employment Opportunities For College Graduates In The Food And Agricultural Sciences

Description

The Higher Education Programs office of the U.S. Department of Agriculture is responsible for monitoring the availability of and employment opportunities in the food and agricultural sciences. As part of this effort, periodic studies are conducted that assess the employment demand and supply situation for a range of occupations in food and agricultural science that require four year college degrees. A variety of occupations are included and are grouped into six general clusters. These occupational clusters are:

(1) scientists, engineers, and related specialists;

(2) managers and financial specialists;

(3) marketing, merchandising, and sales representatives;

(4) education, communication, and information specialists;

(5) social service professionals; and

(6) agricultural production specialists.

This study is repeated on a five-year cycle with the latest report published in 1991. The primary source of employment demand data used in preparing this study was the occupational projections prepared by the Bureau of Labor Statistics. Information on detailed occupational employment in specific industries used to compute the demand estimates are obtained from the BLS industry/occupation employment matrix system. Information on the number of college graduates was obtained from the National Center for Education Statistics, and/or was obtained directly from education institutions by DOA staff.

The report also includes an extensive technical Addendum that thoroughly explains the information base, the methodology and process used to construct the estimates and the technical support provided by the education community.

Relationship to Agribusiness

A close relationship exists between the procedures followed in preparing the employment estimates presented in this study and the agribusiness project. Both efforts use the same BLS data base for estimating national employment and projected job openings estimates.

There are three major differences between the past agribusiness projects and the series of reports prepared by the DOA. First, the DOA reports are limited to the nation as a whole while the principle purpose of the agribusiness projects has been to estimate employment opportunities at the State level or local level. A second difference is that the DOA series focuses upon occupations requiring four year college degrees while the agribusiness project covers all occupations that require competencies provided by agricultural education, regardless of the level of education. Finally, the DOA program also prepares estimates of future graduates (supply) that will be available for work by field of study and compares these estimates to the corresponding demand for employment in related occupations. The DOA study then presents an analysis that reviews the relationship between the demand and supply of workers in these occupational fields.

Publication

Employment Opportunities for College Graduates in the Food and Agricultural Sciences, 1990-1995; Higher Education Programs, Cooperative Research Service, U.S. Department of Agriculture, Washington D.C.

Employment Opportunities for College Graduates in the Food and Agricultural Sciences, 1990-1995, Technical Addendum; Higher Education Programs, Cooperative Research Service, U.S. Department of Agriculture, Washington D.C.

Department: U.S. Department of Agriculture
Agency: Economic Research Service
Program: Special Research Reports

Description

The Economic Research Service of the Department of Agriculture investigates a broad range of activities associated with workers in agriculture. During the past few years, a number of these studies examined information and issues related to employment in the agricultural and agriculture related industry sectors. Listed below are a number of such reports. Each is briefly reviewed and, where appropriate, its possible relationship to the Agribusiness project noted.

"*Agricultural Outlook, April 1991; "Outlook Dim for Food-Related Job Growth*"

This article was published in the publication *Agriculture Outlook*. It reviews recent employment trends in the food processing industries (SIC 20) and discuses the employment outlook. Some State and county information is presented. Employment projections are not presented. No mention of BLS current industry employment estimates or projections is made.

This report would seem of very limited value to the agribusiness project. It is restricted to the food processing industry and presents little quantified information.

"*A Profile of Hired Farmworkers*", 1990 Annual Averages, Agriculture Economic Report No. 658

This report presents employment information on "hired farm workers." It presents characteristics of hired farm workers such as their age, sex, education and race/ethnic composition. Employment is divided by sector, i.e., crop production, livestock production and agricultural services. Data on earnings and hours of work are also included as well as the number of workers by region. Included in the report is a review of the data source and a comparison made to data collected in the 1987 Agriculture Work Force Survey.

The data base for this report is the 1990 annual averages from the Current Population Survey (CPS). As indicated earlier, the CPS has a very small sample.

CPS annual average employment data are currently being used to construct the agricultural industry sector and farming occupations of the national industry/occupation employment matrix. Thus, at the national level, the CPS is a major source in determining current and projected national employment in agribusiness. As noted earlier, the CPS has rarely been used directly to estimate State agricultural employment because of the small sample size.

"*The Agricultural Work Force of 1987, A Statistical Profile*", Agriculture Economic Report Number 609, Economic Research Service, U.S. Department of Agriculture

This report presents employment and demographic characteristics information of the Agricultural work force in 1987. These data were collected as part of the Agricultural Work Force Supplement to the December 1987 Current Population Survey (CPS) conducted by the Bureau of the Census. (Similar data were also collected in 1985 and 1986 using DOL resources. Funding of the special supplement was discontinued after 1987.) The survey identified persons who worked on farms at some time during 1987. Covered were each of the three components of the agricultural industry work force, i.e., hired farm workers, farm operators, and unpaid farm workers. Data are reported separately for each category of worker. In total, the survey estimated that about 7.7 million persons worked on farms at some time during 1987. Considerable demographic information is presented in the report. Employment and other characteristics information are also reported for ten geographic regions.

Had this survey been continued, these data may have been very useful in constructing State employment estimates for the agricultural industry sector. At a minimum, it demonstrates that the CPS may be a useful source in establishing regional employment control for agriculture. As already noted, a lack of information on current and projected employment in the agricultural industry sectors is a serious handicap in estimating current and projected agribusiness employment.

"*Hired and Contract Labor in U.S. Agriculture*", 1987; A Regional Assessment of Structure

According to the article "this report looks at the structure of hired and contract labor by examining farm labor expenditures by type of farm, size of farm, and geographic area. Data presented in this report come from special tabulations on labor from the "1987 Census of Agriculture". Reported is information on labor expense (hired or contracted) by type of farm and geographic area. State data are shown on the number of farms, farms with hired labor, farms with contract labor and farms with both hired and contract labor.

There may be some possible use of these data in the construction of State employment estimates in the agricultural industry sector. The Census of Agriculture provides the most detailed geographic data available on the number and types of farms and the expense of hired and contracted labor.

"*The Farm Entrepreneurial Population*", 1988; Rural Development Research Report Number 78

This report provides information on a farm population identified as persons whose primary employment is in the occupation of farm operators or manager and/or self employed persons who had income from farming. This group and its household members are called the farm entrepreneurial population. This report presents social, economic, and demographic characteristics of this population. The data used in this report were collected during the March, 1988 CPS.

The study covered a population of 5.3 million of which 3.4 million were farm operators; about 2.0 million received only farm income. Of this 2.0 million, 712,000 were primarily employed in nonagricultural occupations. A regional distribution of this population and farm operators is also provided.

These data may prove useful in providing information on workers that are secondary job holders in agriculture. In addition, the information may be of value to educational planners. As the study concludes, "People with ties to farming are a diverse group. Although farming is a life style choice for some people, the use of farm occupations and farm self-employment income criteria for identifying farm people emphasizes farming as a business. People who make their living by farming must have appropriate skills for the farm business as well as the necessary skills to compete for off-farm jobs."

Department: U.S. Department of Commerce
Agency: Bureau of the Census
Program: 1990 Decennial Census

Description

The decennial census is conducted every ten years and provides one of the most complete counts of employment by industry and by occupation. (For a more complete description of the data available from the 1990 census see NOICC Occasional Paper 2 "*An Appraisal of NOICC/SOICC Needs for Data from the 1990 Decennial Census*".) As previously indicated, the first agribusiness projects used the 1970 census as the basic source of employment data. Currently, BLS continues to use CPS (and census) data as the basic source of occupational employment in production agricultural industry sectors. Comparable CPS data are unavailable by State and historically the census has provided the only source of occupational employment for the agriculture, forestry and fishing industry (SIC's 01, 02, 07, 08 and 09). State estimates may continue to rely heavily upon 1990 census data.

The occupation and industry classification systems used by the 1990 census vary little from those used in 1980. Current publication plans indicate that some employment by State for the agricultural industry sector and occupations will be available. In addition, BLS and NOICC have obtained a special tabulation of industry employment cross classified by occupation for each State.

Relationship to Agribusiness

Census data will continue to play a very important role in the development of estimates of employment in agribusiness occupations by State. While other sources may be used, State employment estimates for occupations in the production agriculture and forestry and fishing sector will continue to rely heavily upon the decennial census.

Department: U.S. Department of Commerce
Agency: Bureau of the Census
Program: Census of Agriculture

Description

The Census of Agriculture is the most extensive source of information about the Agricultural sector of the economy. The survey is conducted every five years and the results published in a series of reports. The latest published data are for 1987. The data from the 1992 survey has been collected and partial results are expected before the end of 1994. No specific information on employment is collected by the survey.

Relationship to Agribusiness

The survey has very detailed geographic information on the number and types of farms. These data may be of some value in distributing employment controls established for broader geographic areas. Also, the Census Bureau has constructed an extensive mailing list to use in collecting these data. The mailing list, though confidential, is available and might be useful in conducting employment surveys in agriculture.

Related Reports of Other Organizations

A Special Report: An Assessment of the Appropriateness and Availability of Agricultural Employment Data; prepared for the Interstate Conference of Employment Security Agencies by the Labor Market Information Committee.

This report presents the results of a July 1990 survey of State Employment Security Agencies designed to identify the availability, quality and use of employment data for the agricultural industry sectors, i.e. SIC's 01, 02 and 07. The States responding to the survey indicated wide variations in the availability of these data. Few States indicated the availability of comprehensive data covering all classes of workers, i.e. wage and salary, self employed, and unpaid family.

The study concluded that "there appears to be a great deal of dissatisfaction with the current collection and reporting methods used to capture agricultural employment data. ... the findings suggest that the different agencies involved in agriculture need to develop standardized concepts and definitions". The survey indicated that 36 States reported that a standardized system should be established. The report included the following recommendations:

(1) A closer, coordinated effort between the various agencies that collect and distribute data on agriculture. Those agencies involved need to agree on definitions and consider who are the end users of this data.

(2) Explore the creation of a minimum standard for unemployment (UI) covered employment for agricultural employers.

(3) The federal government should take the lead to ensure consistent and reliable data collection.

(4) Develop operational definitions that are consistent among different agencies. This needs to be done at both the state and federal level.

(5) In order to assist SESA's and other agencies, there needs to be a means of sharing data on agriculture employment. Therefore, ICESA should take an active role in developing a common data base that can be used by multiple users.

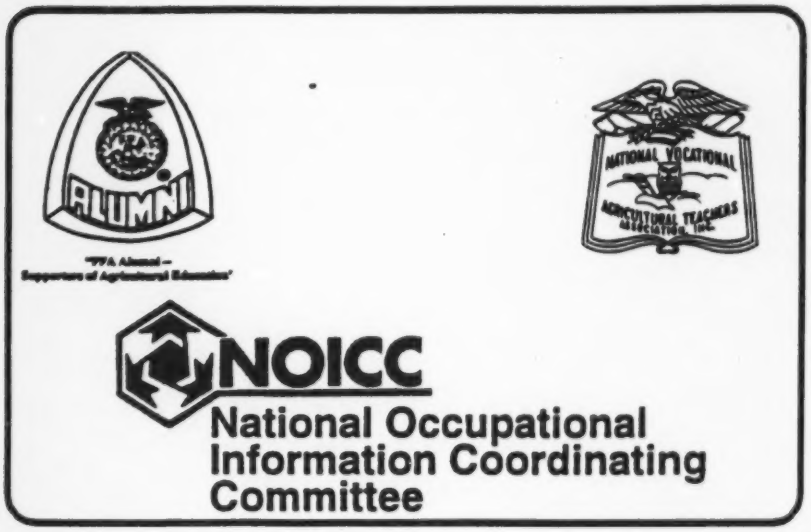
These recommendations have a direct and important relationship to estimating employment in agribusiness. The availability of a standardized data base for employment in the agricultural industry sectors at the State level would greatly improve and expedite the development of employment in agribusiness occupations.

The Strategic Plan for Agricultural Education, A National Mobilization Plan for Revolutionary Change in Agricultural Education

This report presents the findings of participants in the National Summit on Agricultural Education in February and May 1989. This summit was held for the purpose of developing a Strategic Plan For Agricultural Education. The summit resulted in establishing a series of goals that were to be "focal points to set overall priorities for agricultural education". Among the goals presented and discussed was one pertaining to the use of employment information. It states:

Goal 4:"to develop education programs that continually and systematically respond to the trends and demands of the marketplace".

This educational objective clearly reflects the need for the occupational employment opportunity information being developed through the agribusiness project.



SECTION II

THE PROCESS

SECTION II

IDENTIFYING OCCUPATIONS THAT REQUIRE COMPETENCIES IN AGRICULTURAL EDUCATION: THE PROCESS

Introduction

Agricultural education, at both the secondary and postsecondary levels, prepares students for employment in a broad range of agribusiness occupations. The purpose of this section, is to identify the occupations requiring competencies in agribusiness. The project focuses on the occupations covered by the OES program. The OES program is the primary source of current and projected employment. Once the OES occupations requiring agribusiness competencies are identified, current and projected employment opportunity information may be tabulated from the existing data base maintained by BLS and State agencies.

As indicated in the previous section of the report, earlier agribusiness studies had selected and organized agribusiness occupations into three categories. These were: (1) occupations for which all workers require or use agribusiness competencies; (2) occupations for which all workers in some industries require or use agribusiness competencies; and (3) occupations for which some workers in some industries require or use agribusiness competencies.

The most recent list of "agribusiness occupations" was prepared and released in 1985. Since that time, many changes have been made in the occupations covered by the OES survey program and in the most recent round of BLS national projections. The process of introducing those changes is addressed in the following section of the report.

Updating of the lists of occupations requiring agribusiness competencies was accomplished following a three-step process:

Step 1. Develop preliminary updated lists of occupations for review.

Step 2. Convene a National Agribusiness Work Group to review and validate these lists.

Step 3. Circulate the lists for review and comments by selected States.

Step I. Develop a preliminary list of occupations.

Preliminary lists of OES survey occupations were developed using the original lists prepared in 1985 by the Iowa study. The Iowa lists provided the reference point to begin the process of adding and/or deleting occupations. First, the 1985 list was reviewed. Next, all changes made to the OES and matrix programs between 1985 and 1992 were identified and documented. (The NOICC Crosswalk and Data Center operated by the Iowa SOICC under a grant from NOICC provided a special comparison computer listing that assisted in this process.) Where changes had occurred, each was examined and those closely related to agribusiness were identified and introduced into the appropriate list. A large share of the changes involved the simple addition of new OES occupations. Many of the new occupations were from the (1992) OES survey of the Agricultural Service industry sector (SIC 07). Changes also resulted from revisions to occupations covered in the BLS matrix system. A number of matrix occupations had undergone significant change during the 1985-1992 period. All such changes were reviewed and, when appropriate, entered into the new (1992) proposed list of agribusiness occupations.

The industry sectors selected and assigned to occupations in the original (1985) lists 2 and 3 were also carefully reviewed. A number of inconsistencies were identified and corrected. Several new occupations and related industries were added to new proposed lists 2 and 3. The resulting preliminary (1992) proposed lists that resulted from this process are shown in Appendix A (National Workshop Review Materials). These lists were then used for the review and validation step.

Step II. Review and Validation by the National Agribusiness Work Group.

Decisions concerning the final occupations selected as agribusiness were made by The National Agribusiness Work Group. Members of this group were selected jointly by the FFA, NVATA and NOICC (See Section III for the list of work group members). The Work Group convened on October 22 and 23, 1992 (See Section III for meeting agenda). The primary purpose of the work group was to review and validate the preliminary (1992) lists of agribusiness occupations. Prior to the national meeting, these lists were provided to the work group to facilitate the review process.

A broad range of resource material was provided for use by the participants at the workshop. (See Section III for a list of support material). As a first step in the review and validation process, members of the work group established a definition for the term "agricultural competency" as it applies to the relationship between agricultural education and employment in occupations. Since the task of the work-group was to examine occupations requiring a wide range of job skills, it was determined that the term "agribusiness competency" should also be broad and reflect a range of education and training skills. Thus, the group decided that level of education should not be a limiting factor in the selecting of occupations. The workgroup defined agricultural education competencies as including "***research for, production of, primary marketing, processing and sales of animals, plants, water, soil, and air***". This definition includes as sources of competency learning those acquired in secondary, two-year postsecondary, adult, undergraduate, graduate, and work based educational programs. Once established, these

components of this definition were used as a primary criteria applied in the selection process; i.e. whether an occupation should be included or excluded from further consideration.

The following briefly describes the process followed by the work group to review the occupation lists. (Section III contains an outline of the process). First, each detailed occupation included on the proposed lists was examined and discussed by the work group. Following the discussion, a decision was made by the group to retain or exclude the occupation. If the decision was to retain the occupation, it was then assigned to list 1, list 2 or list 3. For occupations assigned to list 2 or list 3, the appropriate industry sectors were then selected. Finally, individual work group members suggested additional occupations for consideration. These were discussed and, as appropriate, added to List 1 and list 2.

During the review process, the work group agreed to eliminate proposed list 3 ("occupations for which some workers in some industries require agribusiness competencies") from the project. They concluded that many of the occupations proposed for list 3 did not meet the selection criteria. Furthermore, similar lists developed in earlier projects had proven of little value since they covered only some of the workers in the occupation in the specific industry. Occupational employment estimates could not be compiled using only a share of an occupation's employment since OES data covers all workers in an occupation (in an industry) not just the share that require competencies in agribusiness. For example, we may be able to identify loan officers working in banks, but we would not be able to identify loan officers specializing in agricultural loans working in the banking industry. Based on these factors, the work group recommended that list 3 be eliminated. The group reviewed list 3 occupations and assigned them to lists 1 and 2 as appropriate or removed them from further consideration.

Step III. Review and Comment by Selected State Agencies.

Once Lists 1 and 2 were finalized, a draft copy of the lists and the final report was provided to a selected group of 12 States for review and comment. Following this review an additional review and validation was conducted in 4 States. The project team visited the 4 states and met with a group in each state made up of members from several groups to go over the results and to discuss future plans and problems, (See Section III for reports on both sets of validation.)

Final List of Occupations Requiring Agribusiness Competencies.

The final results of the process described above is presented in the following tables. These two lists represent the current lists of occupations requiring competencies in agribusiness. List 1 presents "occupations that require or use agribusiness competencies in any industry they are employed. List 2 presents "occupations that require or use agribusiness competencies in selected industries." Both lists include only occupations that are covered by the OES survey and/or the BLS industry/occupation matrix systems. The availability of employment information on these occupations may vary from State to State.

LIST 1 - OCCUPATIONS THAT REQUIRE AGRICULTURE COMPETENCIES IN ANY INDUSTRY WHERE EMPLOYED

TITLE	OCCUPATION CODE
A. Standard BLS/OES Matrix Occupation	
1. Purchasing agents and buyers, farm	21305030
2. Landscape architects	22308070
3. Foresters and conservation scientist	24305075
4. Agriculture and food scientist	24302077
5. Veterinarians and veterinary inspectors	32114159
6. Animal caretakers, except farm	79017502
7. Farm workers	74002504
8. Nursery workers	79005505
9. Farmers	71002507
10. Farm managers	71005508
11. Forest and conservation worker	79002515
12. Fallers and buckers, logging	73002517
13. Logging tractor operators	73011518
14. Log handling equipment operators	73008519
15. Gardeners and groundskeepers, except farm	79014524
16. Farm equipment mechanic	85321642
17. Dairy processing equipment operators, including setters	92932879
18. Cannery workers	93935905
19. Meat, poultry, and fish cutters and trimmers, hand	93938911

LIST 1 - OCCUPATIONS THAT REQUIRE AGRICULTURE COMPETENCIES IN ANY INDUSTRY WHERE EMPLOYED (CON'T.)

TITLE	OCCUPATION CODE
B. OES Survey Occupations Collapsed to Form BLS Matrix Occupations	
1. Supervisors, farm., forest., and agr. rel. occ. (Matrix)	79014525
a. First line supervisors, agriculture and agriculture related occupations (OES survey)	72002526
b. Supervisors, farm workers (Census/CPS)	72008527
c. Supervisors, related agriculture occupations (OES Survey)	75015528
2. All other agriculture, forestry, fishing related workers (Matrix)	79998529
a. Farm equipment operators (OES survey)	79021530
b. Graders and sorters, agriculture products (OES survey)	79011531
c. Inspectors, agricultural products (Census/CPS)	75005532
d. Agriculture, forestry, fishing and related occupations (OES survey)	70000533
e. All other agriculture, forestry and related workers (OES survey)	79999534
3. All other timber cutting and related workers (Matrix)	73098520
a. Choke setters (OES survey)	73005521
b. Log graders and scalers (OES survey)	79008522
c. All other timber cutting and related workers (OES survey)	73099523
4. Butchers and meatcutters (Matrix)	89803686
a. Butchers and meatcutters (OES survey)	65023687
b. Slaughterers and butchers (OES survey)	89802688
C. OES Survey Occupations Collapsed with Non-agribusiness Occupations	
1. All other engineers (Matrix)	22198060
a. Agricultural engineers (OES survey)	22123061
b. (other OES survey occupations- computer engineer, engineers, marine architects, marine engineers, Safety engineers, all other engineers)	
2. Other law enforcement occupation (Matrix)	63033482
a. Fish and game wardens (OES survey)	63041484
b. (other OES survey occupations- Bailiffs, parking enforcement officers, railroad and transit police and U.S. marshals, etc.)	

LIST 1 - OCCUPATIONS THAT REQUIRE AGRICULTURE COMPETENCIES IN ANY INDUSTRY WHERE EMPLOYED

TITLE	OCCUPATION CODE
D. Occupations Included on 1992 OES Agricultural Service Industry Survey Questionnaire	
1. Nursery and greenhouse managers	15031
2. Lawn service managers	15032
3. Veterinary Technicians/technologists	32951
4. Animal breeders	79015
5. Animal trainers	79016
6. Pruner	79033
7. Sprayers/Applicators (agricultural services)	79036
8. Lawn maintenance worker	79038
9. Veterinary assistants	79806
10. General farmworkers	79855

List 1: Occupations That Require Agribusiness Competencies in Any Industry Where Employed.

The occupations presented in list 1 require or use agribusiness competencies in any industry. All list 1 occupations require or use knowledge gained through some level of agricultural education without regards to the industry sector of employment. Occupations have been grouped into four categories (A, B, C, and D) according to the availability of national employment data (employment data availability may vary from State to State).

Often OES survey occupations are not shown separately in the BLS matrix system but are combined with other occupations. Sixteen (16) of the nineteen (19) agribusiness occupations presented in "list 1, group A" (i.e. purchasing agents and buyers, farm; landscape architects; etc.) are matrix occupations formed from a single survey occupation. Thus, employment estimates shown for these occupations are based solely on the OES survey. The remaining three (3) agribusiness occupations shown in "list 1, group A", (farm workers, farmers, and farm managers) are occupations derived from the CPS/Census classification system and national employment estimates are based on the CPS. (CPS employment estimates for these occupations are not available at the State level.) Current (1990) and projected (2005) national employment estimates are available and published by BLS for all agribusiness occupations shown in "List 1, group A".

List 1, group B includes occupations that were formed by combining two or more detailed agribusiness occupations (some based on the OES survey and others on the CPS) to form a matrix occupation. Two of the four "list 1, group B" matrix occupations (All Other Timber Cutting and Related Workers and Butchers and Meatcutters), were formed by combining OES survey agribusiness occupations. The other two "list 1, group B" matrix occupations, (Supervisors, Farm., Forest., and Agr., Rel., Occ.; and All Other Agriculture, Forestry, Fishing and Related Workers), were formed by combining OES survey based agribusiness occupation(s) with CPS based agribusiness occupations. Current employment (1990) is available for all occupations shown in "list 1, group B" (both OES survey and matrix). However, projected national employment is only available at the matrix (collapsed) occupational level. States may not have current or projected employment estimates for some of these occupations.

List 1, group C occupations are the third category of occupations shown in list 1. These matrix occupations were formed by combining an OES survey occupation, that has been identified as an agribusiness occupation, with one or more OES survey occupations that are not agribusiness occupations. Only two OES survey agribusiness occupations are included in "list 1, group C", (a) Agricultural Engineers and (b) Fish and Game Wardens. Both have been combined with several non-agribusiness occupations to form matrix occupations. Current employment estimates are available for both OES survey agribusiness occupations but projections of employment are only prepared for the matrix occupational level. The availability of employment data for these occupations may vary from State to State.

The final group of occupations included in List 1 is **Occupations Included in the 1992 OES Agricultural Service Industry Survey (list 1, group D)**. This is a group of OES Survey agribusiness occupations where employment data are currently being collected in the on-going agricultural service industry sector survey.

LIST 2 - OCCUPATIONS THAT REQUIRE AGRIBUSINESS COMPETENCIES IN SELECTED INDUSTRIES

OES/MATRIX OCCUPATION/INDUSTRY		
TITLE	OCCUPATION CODE	INDUSTRY CODE
1. Engineer, Chemical	22114051	
a. Agriculture, Forestry & Fishing		100000
b. Agricultural Chemicals		422870
2. Engineer, Electrical & Electronic	22126053	
a. Agriculture, Forestry & Fishing		100000
b. Farm & Garden Machinery		413520
3. Engineers, Mechanical	22135055	
a. Agriculture, Forestry & Fishing		100000
b. Farm & Garden Machinery		413520
4. Biological Scientist	24308076	
a. Agriculture, Forestry & Fishing		100000
b. Farm & Garden Machinery		413520
c. Meat Products		422010
d. Dairy Products		422020
e. Preserved Fruits & Vegetables		422030
f. Grain Mill Products		422047
g. Sugar & Confectionery Products		422060
h. Beverage Industry		422080
i. Misc. Food & Kindred Products		422090
j. Agricultural Chemicals		422870
k. Retail Nursery & Garden Stores		625260
5. Chemists	24105093	
a. Agriculture, Forestry & Fishing		100000
b. Farm & Garden Machinery		413520
c. Meat Products		422010
d. Dairy Products		422020
e. Preserved Fruits & Vegetables		422030
f. Grain Mill Products		422047
g. Sugar & Confectionery Products		422060
h. Beverage Industry		422080
i. Misc. Food & Kindred Products		422090
j. Agricultural Chemicals		422870
k. Retail Nursery & Garden Stores		625260
6. Economist	27102101	
a. Agriculture, Forestry & Fishing		100000
7. Designers, except Interior	34038180	
a. Agriculture, Forestry & Fishing		100000
b. Farm & Garden Machinery		413520
8. First Line Supervisors & Managers	41002286	
a. Retail Nursery & Garden Stores		625260

OES/MATRIX OCCUPATION/INDUSTRY		
TITLE	OCCUPATION CODE	INDUSTRY CODE
9. Biological & Agriculture Technicians & Technologists	24502242	
a. Agriculture, Forestry & Fishing		100000
b. Farm & Garden Machinery		413520
c. Meat Products		422010
d. Dairy Products		422020
e. Preserved Fruits & Vegetables		422030
f. Grain Mill Products		422047
g. Sugar & Confectionery Products		422060
h. Beverage Industry		422080
i. Misc. Food & Kindred Products		422090
j. Agricultural Chemicals		422870
k. Retail Nursery & Garden Stores		625260
10. All Other Sales and Related Workers	49999294	
a. Retail Nursery & Garden Stores		625260
b. Farm & Garden Machinery		413520
11. Inspectors & Compliance Officers, except Construction	21911031	
a. Agriculture, Forestry & Fishing		100000
b. Farm & Garden Machinery		413520
c. Meat Products		422010
d. Dairy Products		422020
e. Preserved Fruits & Vegetables		422030
f. Grain Mill Products		422047
g. Sugar & Confectionery Products		422060
h. Beverage Industry		422080
i. Misc. Food & Kindred Products		422090
j. Agricultural Chemicals		422870
k. Retail Nursery & Garden Stores		625260

List 2: Occupations That Require Agribusiness Competencies in Selected Industries.

List 2 contains eleven (11) occupations that require or use agribusiness competencies in selected industry sectors. Workers employed in this occupation in other industry sectors do not require the same agribusiness competencies. Usually the industries where workers require agribusiness competencies are those primarily involved in producing or marketing products and providing services closely related to agriculture. For each of the eleven occupations shown in List 2, the occupation is followed by a list of the BLS matrix industries which require agribusiness competencies. For example, persons employed as Chemical Engineers (occupation code 22114051) require agribusiness competencies when employed in the Agriculture, Forestry, and Fishing industry (industry code 100000) and the Agricultural Chemical industry (industry code 422870). Chemical Engineers employed in other industry sectors would not require such competencies.

Future Implementation and Data Base Issues.

A principal objective of this project was to identify occupations covered by the BLS/OES program that require or use agribusiness competencies. Section II of this report presented lists of these occupations. However, during the course of this project, a number of important short-term and long-term issues were identified and remain to be addressed. For example, current and projected employment estimates for the agribusiness occupations must be compiled from the existing data base. In some States, this task will require that the data base be expanded and improved.

Many long-term problems need resolution. For example, the procedures for estimating current employment in the agricultural industry need to be reviewed and standardized. Leadership must be provided to carry out that task. There is also a need to establish and maintain a program that prepares employment opportunity information for agribusiness occupations on a regular basis.

The following section briefly discusses these and other important issues that need to be addressed. Potential areas where future action and investigation may be required are identified.

Short-Term Information Development and Implementation Issues.

As stated above, the primary objective of this project was to prepare a list of BLS/OES occupations that require or use agribusiness competencies. Lists 1 and 2 presented those occupations. Using these lists, it is now possible to tabulate current and projected employment estimates from the existing BLS and State agency OES data bases. Compiling these data is a simple task but will require (1) the full agribusiness occupational employment data base, including employment for the agricultural industry sector, and (2) a set of instructions on how to assemble the information from that data base. This latter process may be accomplished by manually tabulating the data from the matrix, however NOICC has contracted with the Utah Service center to modify to the existing Industry/occupational matrix processing system to automatically prepare tabulations for occupations related to agribusiness.

Estimating total future job opportunities in agribusiness occupations also requires the preparation of estimates of the number of job openings that will result from the need to replace workers that leave the occupation. Such openings occur when workers leave the labor force for reasons such as retirement, disability, death, etc. Historically, replacement needs have exceeded employment opportunities that result from employment growth. A set of national rates was recently developed and published by BLS (see *Total and Net Occupational Separations: A Report on Recent Research, BLS, August, 1991*).

Another short-term implementation issue is the failure of some States to prepare adequate employment estimates for the agriculture, forestry and fishing industry sectors. This issue is especially critical in the agricultural production sectors (SIC's 01 and 02) where many States appear to lack current and projected employment estimates. As noted earlier, the ICESA report has identified and documented this issue. Unless corrected, the lack of these data will severely hamper the development of employment estimates for agribusiness occupations in many States. These variations in coverage are also reflected in State projections of industry and occupational employment. Without reliable current and

projected employment levels for these important sectors , a tabulation of employment opportunities in agribusiness will be incomplete and may even result in misleading information.

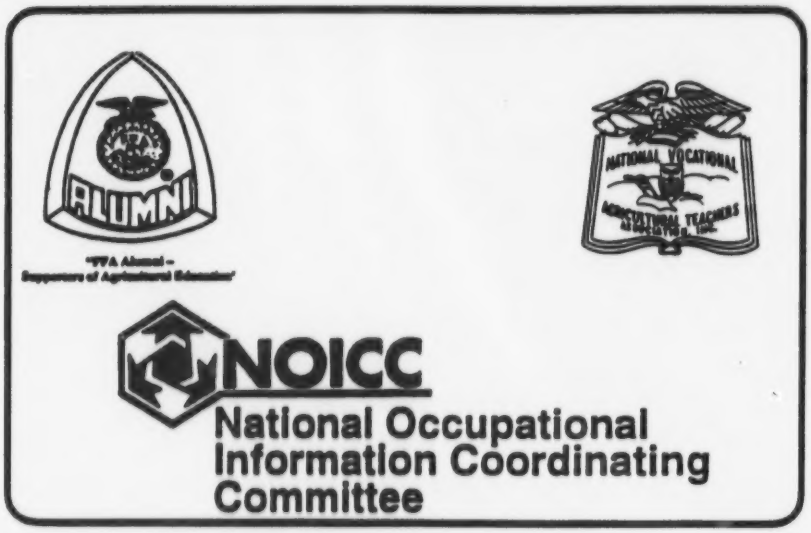
Long-term Information Development and Use Issues

The long-term issues fall in two inter-related areas; one deals with data base issues , and the second, with the use of the information in the decision-making process.

Data Base Issues: There is a need to develop a long-term strategy that insures the continued availability of information on job opportunities in agribusiness. Past efforts have been projects with limited short-term objectives. What is needed is an established program that insures the continuous preparation of these data and allows for the development of technical improvements in future years. As indicated earlier, major efforts are needed to improve and standardize the procedure used by the States to estimate employment in the agricultural industry sectors. Presently, it appears that no federal government agency provides technical guidance in this area. Action should be taken to introduce the previously cited ICESA recommendations. The implementation of these recommendations would greatly enhance the availability and quality of employment estimates for these industry sectors. Resources need to be committed to accomplish this task.

Data Use Issues: In the past agribusiness projects have focused exclusively on compiling employment data. Little emphasis was placed on the use of the information. Efforts may now be needed to examine how these data can be integrated into the decision-making processes in agricultural education. NOICC has supported numerous efforts designed to improve the use of occupational information in education planning and career guidance. The information developed in this project also has potential applications in these areas as well as in curriculum development. Presently such effort have been limited to those being carried out by the Office of Higher Education, State Cooperative Programs, U.S. Department of Agriculture. The efforts of that office focus on education programs at the baccalaureate level and above. No similar efforts appear to be directed to other levels of education. Efforts to integrate these data into such processes may be of critical importance if agricultural education is to continue meeting the needs of the economy and objectives of students.

MicroMatrix use: NOICC has funded the development of computer software to be used by the States to develop the data within each state for agribusiness related employment. When a State updates the employment projections for the State, those States using the MicroMatrix System will be able to extract the data related to the lists developed under this project.



SECTION III

SUPPORT MATERIALS

SECTION III
SUPPORT MATERIALS

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AGRICULTURAL OCCUPATIONAL WORK GROUP
AGENDA
Crystal City Marriott
October 22-23, 1992

Thursday, October 22, 1992

1:00 - 1:30 P.M.	Introduction, Agenda Discussion and Opening Remarks	Robert W. Cox, FFA Alumni Association Bob Graham, NVATA Rodney Slack, NOICC
1:30 - 2:30 P.M.	Background and Discussion of Employment Issues	Richard Dempsey, Consultant
2:30 - 2:45 P.M.	BREAK	
2:45 - 4:30 P.M.	Technical Review of Agribusiness Occupations, Industries and Education Lists	Dempsey/Slack

Friday, October 23, 1992

8:00 - 9:00 A.M.	Technical Review (Continued)	Dempsey/Slack
9:00 - 10:00 A.M.	Implementation Strategies (short term) Discussion and Recommendations	NOICC/FFA/NVATA
10:00 - 10:15 A.M.	BREAK	
10:15 - 11:45 A.M.	Future Directions (long term) for Agribusiness Employment Information (Identification of Needs and Possible Solutions)	NOICC/FFA/Dempsey
11:45 - 12:00	Closing remarks	NOICC/FFA/NVATA

LIST OF RESOURCE MATERIALS

I. Manuals

Dictionary of Occupations (DOT)

Standard Occupational Classification Manual

Standard Industrial Classification Manual

Census Classification Manuals
Alphabetic Index of Industries and Occupations
Classified Index of Industries and Occupations

Classification of instructional Programs (CIP)

II. Agriculture Employment Related Publications

Researchers Guide for Collecting State Occupational Employment Data in Agriculture

Employment Opportunities for College Graduates in Food and Agricultural Sciences (and technical addendum)

Farm Employment and Wage Rates 1910 - 1990

Miscellaneous Department of Agriculture and Census Bureau Publications on Employment in Agriculture

III. BLS Materials

OES Dictionary of Occupations, 1988 - 1993

Occupational Projections and Training Data (BLS Bulletin 2401)

How Workers Get Their Training: A 1991 Update (BLS Bulletin 2401)

Industry/Occupation Employment Matrices
Industry by Occupation, 1990 - 2005
Occupation by Industry 1990 - 2005

REVIEW PROCESS FOR LISTS 1, 2 AND 3

Step I.

List 1. Review each occupation and recommend to include or exclude. If their are questions concerning the occupation, read written occupation description from BLS OES dictionary.

Question: should the occupation remain on present list or be moved to list 2 or 3 ? If recommendation is to move, note decision under comment and identify associated industries.

List 2. Review each occupation and recommend to include or exclude. Read BLS OES dictionary.

Question: are the assigned industries appropriate or should industries to be added or deleted. Note decisions under comments.

List 3. Review Each occupation and Select appropriate Employment category for each industry. Read BLS OES dictionary.

Step II.

Review BLS occupation list " B " and identify all potential agribusiness occupations. Check alphabetic index to determine if the occupation is already included on lists 1, 2 or 3. If not already included , recommend appropriate list and associated industries.

Step III.

Note all additional comments and recommendations on appropriate worksheets attached to each list.

DECISION PROCESS

<table>
<tr><td colspan="4">CONSIDER THIS OCCUPATION. .</td></tr>
<tr><td colspan="2">DO ALL WORKERS IN THIS OCCUPATION REQUIRE AGRIBUSINESS COMPETENCIES IN <u>ALL</u> INDUSTRIES?</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>YES</td><td>NO</td></tr>
<tr><td>Then this occupation should be on <u>LIST 1</u></td><td>Then, <u>look at each</u> industry which employs workers in this occupation and ask.</td><td colspan="2" rowspan="2"></td></tr>
<tr><td rowspan="4"></td><td colspan="2">DO ALL WORKERS IN THIS OCCUPATION REQUIRE AGRIBUSINESS COMPETENCIES IN THIS INDUSTRY?</td></tr>
<tr><td>YES</td><td>NO</td></tr>
<tr><td>Then this occupation should be on <u>LIST 2</u></td><td colspan="2">DO <u>SOM</u>E WORKERS IN THIS OCCUPATION REQUIRE AGRIBUSINESS COMPETENCIES I N THIS INDUSTRY ?</td></tr>
<tr><td>YES</td><td>NO</td></tr>
<tr><td colspan="2"></td><td>Then, the occupation should be on <u>LIST 3</u></td><td>After all industries are considered, go to next occupation and begin again.</td></tr>
</table>

A SUMMARY REPORT ON THE 12 STATE REVIEW

INTRODUCTION

Background. The Agribusiness project is being carried out in two Phases. Phase I covered (a) preparing a background paper updating the status of federal programs related to employment opportunities in Agribusiness, (b) developing a preliminary list of occupations requiring agriculture education competencies and (c) conducting a national workshop to review and validate the agribusiness occupational lists. The first phase of the project was completed in December, 1992.

Phase II of the Agribusiness project consists of the following four Activities

(1) Preparing national employment estimates for Agribusiness occupations based on published BLS data .

(2) Conducting a State review of the draft report "Employment opportunities in Agribusiness; An Information and Data Base Update, 1992".

(3) Providing technical assistance to NOICC in modifying the micro-computer matrix processing system.

(4) Preparing the final report.

This report presents the results of the State review; the second activity of Phase II.

The Process of State Review. Twelve (12) States were selected to participate in the State review phase of the project. These States were:

CALIFORNIA
GEORGIA
ILLINOIS
KANSAS
KENTUCKY
MINNESOTA
MISSISSIPPI
MISSOURI
NORTH DAKOTA
TEXAS
WASHINGTON
WYOMING

The State review requests were transmitted from the three cooperating national organizations to their related State agencies, i.e., the National Occupational Information Coordinating Committee (NOICC) to the State Occupational Information Coordinating Committees (SOICC's), the Interstate Conference of State Employment Security Agencies (ICESA) to the State Employment Security Agencies (SESA's) and the National FFA Alumni Association to the State Supervisors of Agriculture Education. Identical requests were sent from each national organization.

In the letter, the States were asked to first examine the definition of "agriculture education competencies" and then review and comment on the following items:

A. Is the process used in identifying employment opportunities for which all workers require "agribusiness competencies" correct?

B. Do you agree with the final lists of occupations? Please list additions, deletions or revisions.

C. Do you agree with the future implementation and data base issues?

D. Please provide a list of issues that concern or prompts comment that will limit use or implementation in your State.

The States were requested to send their coordinated response to the National FFA Alumni Association. The following summarizes the results of the State review.

STATE REVIEW SUMMARY

Responding State agencies. Responses were received from 11 of the 12 States selected for the review process. Only one State (Wyoming) choose not to respond. Seven States submitted a single coordinated response while two separate responses were received from the other 4 States, bringing the total number of separate State responses to 15.

Responses were received from the following State agencies:

Agency	Number of Responses
State Employment Security	7
State Occupational Information Coordinating Committee	4
State Education Agency	4
Total	15

The State comments are summarized and presented by five review areas. The first presents the overall views expressed by the States regarding the project. Then separate summaries are presented covering each of the four questions raised in the review letter.

General Review Comments. Nearly all the State indicated very strong support for the project. The following represent a cross-section of overall State views on the project:

"Applaud the Effort"	California
"Excellent Job"	Georgia
"Critical Issue"	Illinois
"Commend Effort"	Minnesota
"Very Supportive"	North Dakota

"Milestone in Agriculture Education"	Texas
"Needed and long over due"	Missouri

Not a single State questioned the needs for such an effort or offered any negative comment on the overall project.

Agreement with Study Procedures. There was general agreement to the basic approach used in defining agriculture education competencies and to identifying agribusiness occupations. Several States indicated that they were already following such a system. Most States (8) simply noted that the process was through and correct and offered no suggestions for revisions. The remaining three States agreed with the basic approach but offered suggestions for minor changes. Two States suggested consideration for some broadening of the Agribusiness industry definition. Kentucky suggested that industries that supply inputs to agriculture be added, such as government support and regulatory agencies. Minnesota suggested that student follow-up data be used to identify additional industries with employment potentials and also noted that higher education should be better represented on the national review panel. Kansas recommended that private business review the final occupation lists.

Review of Agribusiness Occupation Lists. Of the responding 11 States, six (Georgia, Illinois, Kansas, Mississippi, Texas, and Washington) accepted the occupation lists as proposed by the study. The other 5 States offered recommendations for some changes. The recommendations fell into three areas. First, three States (California, Minnesota, and North Dakota) suggested the following occupations be added to the lists:

Biological technicians	County agent
Life scientist	Botanist
Agriculture and food technicians	Apiarist
Teachers, agriculture education	Soil analyst
Teachers, farm management	Rural youth organizer
Real estate sales	Horticulturist
Farm and home advisors	Plant pathologist
Home economist	Plant entomologist
Fertilizer, chemical technicians	Loan officers

Some of these occupations are part of more broadly defined OES occupations already included on the occupation lists. Several others were considered by the review panel and eliminated. The remainder should be carefully reviewed for possible adoption, if employment data sources can be identified.

Two States (Missouri and Kentucky) suggested that List 3 be reconsidered. This list had been eliminated by the national review panel but both these States felt that some of these occupations should be incorporated into List 2.

One State agency (Minnesota Dept. of Agriculture) questioned including occupations requiring little skill or need for agriculture competencies. Examples cited were Fellers and Buckers, logging; and Meat, poultry and fish cutters, hand.

Future Implementation and Data Base Issues. All the States agreed with the importance of the issues raised in the report. Significant comments made by selected States included:

California - reported that they had full U.I. coverage of wage and salary agriculture workers but lack information on the self employed.

Georgia - stated that the field of agriculture employment statistic lacked coordination and recommended strong national leadership. They also indicated their interest in the modified matrix processing system.

Illinois - Agreed with the data base issues stating that "there should be a specified standard methodology used by all States to develop current and projected employment for the agriculture industries sectors SIC's 01 and 02". They further noted the need for specific technical directions for modify their mainframe matrix processing system.

Minnesota - Expressed concern about the lack of employment coverage in agriculture and noted that Census data was inadequate.

Missouri - Agreed with the data base issues and reported that "the biggest problem in Missouri is the lack of a standard employment data collection method for agriculture production at the national, State and local levels". They continued by stating that "BLS is capable of creating a good employment data collection method if we could get them to join in a cooperative effort with DOA and commerce " .

North Dakota - Agreed with the need for modifications to the matrix processing system.

Texas - Agreed with the issues and suggested that more time be spent on this subject at the annual NOICC technical training conference.

Washington - Agreed with the issues but expressed disappointment that the report paid so little attention to State surveys of agriculture. They noted that other States could learn from these efforts.

(As the States noted above, one of the most important gaps in State employment data is the lack of data for the production agriculture industry sectors (SIC's 01 and 02). This was best summed up by the following comment from Missouri: "it is amazing that we lead the world in our agriculture research and production, but don't really know what is happening with employment on the farm". Based on the comments received, most State seem to agree with that conclusion.)

Special State Issues. The need for additional resources was raised by most States. Currently, there are no federal resources being provided to the States for the preparation of employment projections. One State (Mississippi) noted that this "was a wonderful program but needed funding." Another (North Dakota) stated that "perhaps the Agribusiness project can be a catalyst to encourage funding for State projections."

Several States felt that the education community would need training in the use of these data and suggested that training materials be provided. Minnesota recommended that efforts be made to integrate this information into career information products. California expressed an interest to participate in future national activities because of the importance of agriculture in their economy.

A SUMMARY REPORT ON THE STATE REVIEW MEETINGS ON THE AGRIBUSINESS PROJECT.

Background

The final phase of the Agribusiness project included a series of meeting with appropriate State personnel to review and discuss the findings of the draft Agribusiness Report. The following four State were selected and agreed to participate in this effort. The cooperating States were (1) Ohio, (2) Iowa (3) North Carolina and (4) Virginia.

The meetings focused on four topic areas. These areas were:

1. The process used to define and select Agribusiness occupations.

2. Recommendations for additions and/or deletions from the occupation/industry lists presented in the report.

3. General technical concerns regarding agriculture employment data base.

4. Special State issues.

Two of the meetings were lead by Mr. Robert Cox, Director of the FFA Alumni Association and two by Mr. Robert Graham, Director of the National Vocational Agriculture Teachers Association. The Project Coordinator, presented the major finding of the study and provided resource support at all four meetings.

Meeting Participants And Recommendations

Each State meeting was organized jointly by the Director of the State Occupational Information Committee and the State Supervisor of Agriculture Education.

Participation was encouraged from the broad range of agriculture education and employment related agencies and individuals. (For a complete list of participants by State, see Appendix A)

Appendix B, provides an overall summary of the comments and recommendations received at the State meetings.

APPENDIX A

PARTICIPANTS OF STATE REVIEW MEETINGS

A. OHIO

June 2, 1993
Columbus, Ohio

Jim Pinchak, Associate Director
Division of Vocational
and Career Education,
Ohio Department of Education

Larry Less
Labor Market Information Division,
Ohio Bureau of Employment Services

Keith Ewald
Labor Market Information Division,
Ohio Bureau of Employment Services

Kirby Barrick, Chairman
Department of Agriculture Education,
Ohio State University

Sue Crank, President
Ohio Vocational Agriculture
Teachers Association

Robert Sommers, Assistant Director
Agriculture Education Service,
Division of Vocational and Career Education
Ohio Department of Education

Dixie Sommers, Deputy Director
Ohio Bureau of Employment Services

B. IOWA

Ames, Iowa
October 11, 1993

Dr. Richard Carter
Professor of Agricultural Education and Studies
College of Agriculture
Iowa State University

Mr. Roger Bruene
Office of Agriculture Placement
College of Agriculture
Iowa State University

Dr. Thomas Polito
Assistant Professor of Agricultural Studies
College of Agriculture
Iowa State University

Mr. Alan O'Neal
Consultant
Iowa Department of Education

Ms Judy Erickson.
LMI Unit Manager
Iowa Department of Employment Service

Ms Penelope Shenk
Executive Director
Iowa State Occupational Information Coordinating Committee

C. NORTH CAROLINA

Mr. Bill Parham
North Carolina Department of Agriculture

Dr. Luby Weaver
North Carolina Department of Community Colleges

Dr. Gary Moore
North Carolina State University

Dr. A.P. Bell
North Carolina A & T State University

Mr. Doug Powell
North Carolina Department of Public Instruction

Ms Nancy MacCormac
Executive Director
North Carolina State Occupational Coordinating Committee

D. VIRGINIA

Mr. Glen Anderson
Virginia Department of Education

Tommy Johnson
Henrico County Education System

Dr. Jordan Hudson
Virginia State University

Mr. Mike Thacker
Virginia State Employment Commission

Mr. Jim Wilson
Virginia State Employment Commission

Ms Lynn Bradford
Virginia State Employment Commission

Mr. Ben Berryman
Virginia State Employment Commission

APPENDIX B

COMMENT AND RECOMMENDATION FROM THE STATE REVIEW MEETINGS

A. General

- It was repeatedly stressed that the development of employment requirements for agribusiness should not be a one time project but become a regularly scheduled ongoing program with adequate agency support. Such a regularly scheduled process would allow for improvements in identifying skill needs. For example, many educators felt that further work needed to be undertaken to analyze occupations where a small but important share of the Workforce need agriculture competencies, such as bank loan officers in rural communities and sales workers engaged in selling products related to agriculture production. A dedicated source of resources (people and money) should be identified to continue this activity.

- The education community needs training in the use of these data in program planning, curriculum development, and career guidance activities.

- States express a need for strong national leadership from the agriculture education community to continue the development and expansion of this program. They noted that the position at OVAE responsible for Agricultural and Rural Education should consider LMI and its relationship to agriculture education as an important part of his/her responsibilities.

- Several States felt that action should begin at exploring ways to integrate agribusiness opportunities information into career information system of the NOICC/SOICC network.

- The participants generally agreed that a standardized system of preparing employment estimates for the production agriculture industry sectors was essential. All suggested that some national leadership would be needed to accomplish this objective and should involve the BLS, Department of Agriculture, ICESA and State Employment Security agencies. Suggestions were made that the NOICC/SOICC network initiate an effort in this area.

- Some State Employment Agencies commented that the use of appropriate occupation separation rate is a very important issue. The recommended that it be carefully reviewed at the national level. They felt States need training in this area, and several stated that it should be an item of discussion at the upcoming the NOICC/BLS employment projection training conferences.

B. On the Process Used to Develop the List of Agribusiness Occupations.

- The meeting groups agreed with the general method used in the study.

- Several participants noted that the "agribusiness" definition developed at the national review meeting should be reconsidered and perhaps broadened to cover more activities that supply inputs to the various agriculture production processes.

- During the review of occupations, the issue of including occupations requiring low skill levels, such as "cannery workers" was discussed. The consensus was to leave them on the list.

- A number of additional occupations were identified and provided for inclusion on the list. However, most were occupations lacking a source employment data and could not be formally added to the list.

- Several participants encouraged the use of student follow-up data in identifying occupational outcomes from agriculture education. If available, these data could be of great value in adding additional occupations to the agribusiness list.

C. On the Occupation Lists

- All States were in agreement that the occupation lists provided an excellent beginning for identifying the occupational outcomes of agriculture education.

- While there was basic agreement with the lists of occupations prepared by the project, it was suggested that care be taken to insure that occupations in agriculture services, fisheries and game management are fully covered.

- Several commented that the occupational lists cover many more blue collar than white collar occupations and did not identify many of the "mainstream" career fields.

- A question was raised that the occupational list adequately reflected expected future technological developments such as the new rapidly expanding genetic research area.

- It was suggested that broad career fields in agriculture be identified together with examples of specific occupations covered by them.

- The plan to modify the industry/occupation matrix computer system to automatically prepare tables showing agribusiness employment opportunities was strongly supported at all meetings. The SOICC and Employment Service representatives stated that it would be used in their State, if resources were available.

- A number of participants noted that the type of agriculture production and related occupational needs may vary among the States. It was felt that each State should carefully review the OES survey forms to insure that the survey cover all important occupations in their State.

D. On Communication Issues

- Participants at each meeting agreed that regularly scheduled communication should be developed between agriculture education and the SOICC and Labor market information organizations.

- It was widely agreed that the agriculture education community needs training in the use of these data. A workshop on LMI terminology would be very helpful to State leaders of agriculture education. It was suggested, that SOICC directors conduct workshops on the subject. Other State Education representatives suggested that the Council on Agriculture Education and/or NOICC develop a teacher in-service training program.

- A suggestion was made that a list of questions and definitions should be provided to State agriculture education staff to prepare them for meeting with SOICC and labor market information personnel.

- Presentations on the Agribusiness project should be made at appropriate national conferences such ICESA, NOICC/SOICC, and NVATA conferences.

- NOICC should prepare an article on the project for the Micro-Matrix newsletter.

E. On State Issues

- All State Employment Agencies, while indicating support for the program, strongly urged that resources be made available to support the State in preparing the employment data.

- Generally States strongly supported the need for national technical leadership in preparing employment estimates for the agriculture production industry (SICs 01 and 02).

- Most State strongly urged that the modifications to the Micro-Matrix system be made in such a manner as to allow States the flexibility of adding or deleting occupations.

- A communication mechanism between the SOICC and the secondary and post-secondary agriculture education community should be established and maintained to insure State leadership in identifying the occupational needs of agriculture education.

OCCUPATIONS REQUIRING COMPETENCIES IN AGRICULTURE EDUCATION, EMPLOYMENT 1990 AND PROJECTED 2005, TOTAL UNITED STATES			
		EMPLOYMENT	
I.	OCCUPATIONS COLLECTED AND PUBLISHED BY BLS	1990	2005
A.	Occupations Requiring Agriculture Competencies in all Industries	4,066,000	4,244,000
	1 Farm Occupations	2,060,000	1,768 000
	a. Farm Managers	149,000	173,000
	b. Farmers	1,074,000	850,000
	c. Farm Workers	837,000	745,000
	2. Off-farm Occupations	2,006,000	2,476,000
	a. Landscape Architects	20,000	26,000
	b. Foresters & Conservation Scientist	29,000	32,000
	c. Agriculture & Food Scientist	25,000	32,000
	d. Veterinarians and Veterinary Inspectors	47,000	62,000
	e. Animal Caretakers. Except Farm	106,000	145,000
	f. Nursery Workers	64,000	83,000
	g. Forest and Conservation Worker	40,000	43,000
	h. Fallers & Buckers Logging	36,000	35,000
	i. Logging Tractor Operators	29,000	30,000
	j. Log Handling Equipment Operators	16.,00	17,000
	k. Gardeners & Groundkeepers, Except Farm	874,000	1,222,000
	l. Farm Equipment Mechanics	48,000	52,000
	m. Dairy Processing Equipment Operators, Including Setters	18,000	16,000
	n. Cannery Workers	78,000	73,000
	o. Meat, Poultry, & Fish Cutters & Trimmers. Hand	121,000	136,000
	p. Supervisors. Farm Fish & Agr. rel occ	65,000	72,000
	q. All Other Agr., Forest. & Agr. rel. occ.	129,000	156,000
	r. All Other Timber Cutting & rel. wkrs	27,000	24,000
	s. Butchers & Meatcutters	234,000	220,000

B.	**Occupations Requiring Agriculture Education Competencies in Selected Industries**	**37,000**	**38,200**
	a. Engineers, Chemical	700	500
	b. Engineers, Electrical & Electronic	100	100
	c. Engineers, Mechanical	1,300	1,600
	d. Biological Scientist	800	800
	e. Chemists	4,600	4,300
	f. Economists	200	300
	g. Designers, Except Interior	3,800	4,300
	h. First Line Supervisors & Mgr.	7,800	7,700
	i. Science & Mathematic Technicians	17,300	18,100
	j. Inspectors & Compliance Officers	400	500
II. OCCUPATIONS COLLECTED BUT UNPUBLISHED BY BLS		**N/A**	**N/A**
	a. Agricultural Engineers	N/A	N/A
	b. Fish and Game Wardens	N/A	N/A
	c. Purchasing Agents & Buyers, Farm Prod.	N/A	N/A

EMPLOYMENT IN THE AGRICULTURE SERVICE INDUSTRY, SELECTED AGRICULTURE EDUCATION RELATED OCCUPATIONS, 1992	
	1992 EMPLOYMENT
All Selected Occupations	**261,570**
Nursery and Greenhouse Managers	2,970
Lawn Service Manager	14,980
Veterinary Technicians	18,630
Nursery Workers	22,620
Graders and Sorters Agriculture Products	29,860
Animal Breeders	2,140
Animal Trainers	1,660
Farm Equipment Operators	1,060
Pruners	26,380
Sprayers/Applicators	15,500
Lawn Maintenance Workers	98,100
Veterinary Assistants	27,670

Source: Bureau of Labor Statistics, preliminary unpublished estimates from the 1992 survey of the Agriculture Service Industry sector (SIC 07)